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CURRENT MICROSCOPICAL NOTES.

J. M. Lamb, M.D.

APPARATUS FOR STAINING SERIAL SECTIONS.

Boppmann has described a very simple apparatus for the rapid staining of serial sections, which allows of the treatment of a large number of slides with a minimum amount of stain.

It consists of a rectangular glass dish in which the stain is contained. Two metal standards have attached to them by sliding adjustable supports a carriage made of wire for the slides, which is fitted with a corrugated bottom piece to prevent the slides touching the bottom of the dish, while the top piece consists of a tooth rack work in which the upper part of the slide is supported. By thumb screws the carriage filled with slides on which sections are fixed, may be lowered into the stain and after proper time elevated and in like manner carried through successive reagents. The one he figures will carry 60 slides of the regular dimension, and allow of staining a great number of serial sections. His measurements are : Bottom 16 by 6 cm ; upright, 25 cm., tray 15 × 3.5 m. Ztschr. f. wiss. Mikr., 1895, ×, 459—464.

F. A. Rogers, [Am. Mo. Micr. J., 1895, XVI, 123] states that sections of the cerebellum are unexcelled if stained as follows :

1. Harden small pieces in Müller for six to eight weeks.
2. Transfer direct to alcohol.
3. Imbed in celloidin.
4. Stain 24 hours in Haematoxylon 1 pt., alcohol 10 pts., water 90 pts.
5. Rinse in water and bleach in borax 2 pts., water 100 pts., from one-half to several hours, until the gray substance is yellowish, the white substance remaining black.
6. Wash in water, pass through alcohol, clear in xylol and mount in balsam.

Marked differentiation of tissue results. Perking's cells are very beautifully demonstrated and can be traced to their branches and a complete network of nerve fibres is visible.

A new method for securing paraffin sections to the slide or cover-glass. In the American M. Micr. J., 1895, XVI, p. 119, mention is made of a method of fastening micro-sections to the slide, which promises successful results.

A layer of Mayer's albumen is spread on the slide and sections arranged. A wash of ¾ % collodion was spread over the surface evenly with a camel's hair brush. In about one minute this becomes dry ; longer time may be allowed with advantage ; practically one slide dries while the next is being prepared. The presence of air bubbles, small ones, indicate the right degree of dryness and cause no interference with the process. When dry place in a jar of xylol or benzin, without previous heating for a half hour to dissolve paraffin. Several hours immersion will not injure the tissue. The process may be hastened by moving the slide gently about in the benzin. Remove the benzin in 95 % alcohol, and stain sections in usual way. Benzin has proved as satisfactory as xylol in the process.

The writer recommends that the benzin for removing paraffin be as fresh as possible or else the film of collodion retained a quantity of it and rendered the surface greasy. Owing to cheapness benzin may be used in large quantities and freshness of the reagent readily assured.

The chief advantage of this method is that it dispenses with the need of heat ; the disadvantage,—that the collodion is liable to take the stain. Practically, however, in using the ordinary hematoxglins, eosin etc., there is no difficulty—it is only with the stronger stains that trouble is found. The use of this thin coat of collodion is a simple and effective method for general histological purposes.

NOTES BY W. H. SEAMAN.

Burleigh. Geo. W. A study of the parasites of malaria. Modern Medicine and Bacteriological Review. June, 1895, p. 155. A clinical study of the relation between the growth of the parasitic germs and the interupted progress of the disease. The plasmodia are more plentiful when the temperature begins to rise and in three or four hours after, the most brilliant forms can be seen. The cover slips should stay in sulfuric acid two hours, then in glacial acetic acid one hour, then wash and put in 95 % alcohol. Smear the cleansed finger tip with the first drop from a lancet prick, receive the second on a clean cover, and spread it by another cover so that each corpuscle will lie flat. Let it dry, fix with three parts ether and one of alcohol, stain in 1 % eosin, in 60 % alcohol 45 seconds, then counterstain after drying between filter papers in Loefflers alkaline methylene blue three minutes, wash, dry, and mount in Canada balsam. The plasmodia will be stained blue, the pigment of the plasmodia vandyke brown, and the corpuscles red.

Idem, April, 1895, p. 77. The extra cellular destruction of bacteria in organism. E. Metchnikoff. The peritoneal cavity of animals contains lymph charged with all sorts of leucocytes. The injection of Pfeiffers mixture of serum from vaccinated animals, vibrio cultures and broth, causes the leucocytes to diminish till the lymph becomes quite transparent. The true leucocytes accumulate in masses and are deposited on the surface of the abdominal viscera. They become motionless, present signs of degeneration, and though incapable of capturing vibrios, destroy them by their secretions. The part the leucocytes play in this extra cellular destruction of vibrios can be demonstrated outside of the organism. Add to a drop of the lymph, rich in leucocytes, a small qnantity of the mixture of vibrios and active serum at 150 C., and at the end of a few hours all the vibrios will be transformed into granules.

In the American Naturalist, 1895, Vol. XXIX, p. 82. F. C. Kenyon gives an interesting paper on "Formol as a preserving fluid." After free reference to the papers of Prof. Blinn he sends us the properties of the formol as a preservative :—

Animal objects are hardened without shrinking ; without altering in any way their microscopical structure and without interfering with the technique of staining ; form and color are preserved ; eyes remain much clearer than when preserved in spirit ; mucus is not coagulated and remains transparent.

Vegetable structures are less well preserved ; chlorophyll is not extracted but after long immersion of delicate structure changes its character ; micro sections of plants which have been long immersed in formol yield fine preparations. Among its advantages should be considered its cheapness.

His experiments with Salamander blood are extremely interesting. He placed a few drops of blood on a slide in a 1 % sol. of Formaldehyde. The corpuscles, and especially the nuclei, were seen to swell rapidly, the nuclei becoming almost the size of the cell body and were seen to burst forth from the corpuscle.

With the Erlich-Biondi stain the body of the corpuscle appeared very transparent, while alcohol coagulated the fibrin into a pale yellow mass, and made the cell body more prominent.

Mr. Kenyon concludes, that, for general purposes, in order to avoid swelling or decoloration, a 2 % sol. must be used ; 4—8 give more satisfactory results. He recommends its combination with alcohol. Weak solutions (1 - 2 %) serve the purpose of demonstrating the presence of cells, by swelling of the nuclei.

New ideas upon the structure of the spinal cord in man and the vertebrates. Ramon Y. Cajal, Madrid, Spain, Idem, April, p. 79.

1. The nerve cells of the spinal cord are independent units, never anastomosing, either by protoplasmic ramifications or by their nervous expansion or axis cylinders.

2. Every axis cylinder is terminated by varicose and wavy arborizations, after the fashion of the nerve ramifications of the motor plates of the muscles.

3. These arborizations apply themselves either upon the bodies or upon the protoplasmic expansions of the nerve cells, establishing connections by contiguity, or contact only,—connections as efficacious as could be established by substantial continuity for the transmission of the currents.

4. The cellular body as well as the protoplasmic expansions act as conductors, and do not simply take part in the rôle of nutrition.

5. To cultivate protozoa and spirilla. Idem, July, 170, Beyerinek. Place a bean in a test tube nearly filled with distilled water, water is taken up by the bean and soluble substances diffuse from the latter into the water, the organisms on the surface of the bean develop, producing a cloudiness on its surface. This soon rises owing to the rapid removal of oxygen from the neighborhood of the bean. The level at which the cloud of organism stands is where the oxygen from above and the nutrient stream from below

meet and afford suitable conditions of growth for the bacteria. The bean may be substituted by gelatine or agar. A level presently forms, containing various bacteria. These serve as food for the protozoa that develop higher up. The surface of the water soon becomes covered with a thick layer of bacteria and monads, and the entrance of oxygen is much hindered. Spirilla now develop, forming a level.

Staining of tube casts. B. Bramwell. Idem, Sept. p. 224.

1. Fill a cone glass with equal parts of urine and aqueous boracic acid.

2. When the deposit has settled transfer it to a test tube with two cc. of picro-carmine, mix by shaking, and set aside for 24 hours.

3. A fine mouthed pipette may now be used to draw off the casts for study. If amyloid degeneration of the kidney is suspected, use methyl violet, this will in some cases of waxy disease give the characteristic rose pink reaction.

4. To make permanent mounts, fill a test tube three-fourths full of Farrant's solution, add the stained deposit of No. 3, shake and set aside to settle. The deposit may be examined in three or four days and if desirable may be mounted in balsam.

To examine sputum for tubercle bacillus. Idem, Nov., p. 276. Spread some of the thickest part of the sputum on a cover glass, dry and add two or three drops of aqueous solution of phenic acid 19 parts, alcohol 95 % 1 5parts, saturated alcoholic fuchsin 5 parts, and dry without carbonizing. The specimen is now ready for examination, if bacilli are found, wash in 85 % alcohol, then plunge for two seconds in nitric acid, one to five of water. This gives a yellow stain and when it appears, wash in 60 % alcohol till decolorized, then in water and dry. If double staining is required dissolve one part methyl blue in 1000 parts of water, immerse the slide for five minutes and wash with distilled water.

The bacilli of Koch appear red, the other elements white.

Idem, Jan., p. 21. Geo. W. Burleigh. A study of 13 cases of malaria from widely separated districts, including the Gold coast of Africa, demonstrates by more than 700 examinations of blood, that there is first a special tertian parasite, second there is a malignant tertian parasite, showing characteristic or crescentic forms, fourth in addition to confirming the observations of others on the above points, it is demonstrated that the parasite may survive for months in the blood of persons who have left the malarial districts where the disease was contracted, and even under the favorable conditions afforded by a cold season of the year. See also Laveran on the parasites of malaria, same, page 8.

The composition of the tuberculosis and glanders bacilli. De Schweinitz and Dorset. Journal of the Am. Chem. Society, Vol. XVII, p. 605. Tables of the composition of these germs, both proximate and ultimate are given. It is concluded that cellulose is present, but in minute amount, which may easily escape detection. Differences in the nitrogen contents are marked and may possibly serve for the differentiation of species. Also the differences of albuminoids and fat and a more distinctive study of the albuminoids might be very useful in aiding classification.

The Asiatic Lung Distome in the United States. Henry B. Ward. Medical News, 1895, Mar. 2. Japan, China, Corea and Formosa are seriously affected with a lung distome which causes periodic haemoptysis and chronic cough, with rusty mucoid expectoration. The general appearance of the expectorations is identical with that of tuberculosis with which the disease was formerly confounded. The means of infection are as yet unknown, but it has been found in the lungs of a cat in Ann Arbor, and a shepherd dog from Columbus, Ohio. These facts render its presence in this country certain, and make it important to call the attention of the medical profession to this human parasite, new to this country, for particulars of which reference is made to this paper.

Process of Mounting Fresh Water Algae. By Ad. LeMaire, Preparer. Described by D. B. Ward, in Am. Postal Club.

The plants are piaced for a few minutes in a saturated solution of acetate of uranium to which has been added 0.3 % of chrome alum, then washed thoroughly in clean water. Then the algae are placed on the slide in a few drops of glycerin and water, (glycerin 5 %). Some chlorid of calcium is placed near the slip, and the whole covered with a bell glass. Some drops of dilute glycerin may be added as the evaporation takes place. When the water is all gone the algae are left in pure giycerin. Then mount in glycerin jelly. If the plants are not well washed in clean water after the alum, they may turn yellow.